Full Length Research Paper

Working Capital and Firm Financial Performance in Listed Manufacturing Firms in Nigeria

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ABSTRACT: The study's goal is to investigate the impact of working capital policy on firm profitability using publicly traded manufacturing/industrial firms in Nigeria. The study specifically looked at the following working capital policy indicators: creditor payment period, debtor collection period, and cash conversion cycle. To address the potential effects of Endogeneity in the relationship, the Arellano and Bond dynamic panel data estimation methods were used in the analysis. The findings show that the cash conversion cycle has a positive and significant impact on financial performance, that the creditors payment period (CPP) has a positive impact on firm financial performance that is significant at 5%, that the debtor's collection period has the expected negative sign and that the result confirms statistically that the longer allowable time for debtors' receivable negatively affects profitability. Furthermore, cash flow margin (CFM) has a positive impact on

financial performance that is also significant at 5%, and cash holding has a negative impact on financial performance that is also significant at 5%. Nonetheless, the study recommends that firms do not rely so heavily on debt, particularly in light of macroeconomic insecurity and rate volatility, but rather consider how to develop strategies to reduce their cash conversion cycles. Second, the study suggests that businesses seek long-term financing arrangements with longer payback periods, which will allow them to properly utilize these funds with more convenient investment timelines. Third, the study suggests that firms maintain a cash flow system and liquidity by ensuring a shorter debtors collection period.

Keywords: Firms, financial performance, Nigeria, working capital

INTRODUCTION

Management of working capital refers to all aspects of management of both current and current assets (Fekadu, 2021). Therefore, proper working capital management should make sure that current asset holdings are extended to the extent that the marginal returns on increases in those assets are only equal to the cost of the capital needed to fund this increase while the current liabilities should be used to reduce the average capital cost instead of the long-term debt. One of the most essential management responsibilities is to identify the optimum working capital level in order to balance returns and risk. Companies must balance between investing in current assets and paying for obligations to retain

sufficient liquidity and produce excellent revenues at the same time. They must produce revenue while fulfilling their short-term commitments, as their maturity is consistent with the conditions of their activities (Raheman and Nasr, 2007). Many choices in the investment and financing of working capital need to be addressed. Management must decide, against a fixed asset, the amount to be invested in current assets, taking into account the time-frame needed to recoup the money invested in each category of assets. Investments in land, buildings and equipment, for example, take years to break up whereas investment in current assets may be repaid over a short period of time, depending on the

duration of the business cycle of the company (Afza and Nazir, 2008).

The company's work capital policy approach will largely decide how much cash, temporary investments, inventory and receivables are maintained. This strategy also has implications for returns and future risks. The lack of a solid policy will endanger the existence and continuation of the company (Ramazani et al., 2018). For example, investing in existing assets not easily converted to cash would decrease the liquidity of the company, harm its credit image and raise the costs of borrowed money. It is recognized in literature that companies in the formulation of their working capital policies may be aggressive, conservative or moderate. The aggressive strategy is centred on low-circulation current assets. This reduces the amount of investment in net capital and, owing to reduced investment in less cost-efficient assets and greater financial risks as a result of the decreased liquidity of the company (Afza and Nazir, 2008). The conservative strategy, on the other hand, is based on significant investment in existing assets, which focuses on future sales, and which reduces the danger of liquidity and stock deficits, where this policy leads to poorer returns. It is essential to remember that the related costs and benefits of each kind of Working Capital Policy are affecting profitability.

The aim of working capital management is, then, to reach a kind of balance between current assets and liabilities in such a way that a company can fulfill its financial obligations when it is due. While studies have shown how working capital policy relates to profit-making businesses, such as Almomani et al. (2021), Kabir et al. (2021), Fekadu (2021) Ogunlade et al. (2021), Chakraborty (2018); Hassan, (2017); Oyedele et al. (2017); Muia et al. (2017). However, Dina and Silvije (2018) demonstrated that there may be an endogenous or biased issue caused by missed factors in models evaluating the effect of working capital on the profitability of the business. This may skew the results and alter the outcomes of the study. To create fresh insights and prevent skewed results, a change in research methodology is required. To address this issue, the dynamic panel estimator Arellano and Bond (1991) appears to be used which takes account of the dynamic nature of profitability of the business and accounts for possible endogeneity problems. The study investigates the impact of working capital policy on firm profitability using publicly traded manufacturing/industrial firms in Nigeria

Literature review and hypothesis

Almomani et al. (2021) looked into the relationship between the efficiency of working capital management and the financial performance of industrial firms listed on the Amman Stock Exchange. This study used time series

and data spanning the years 2010–2018 to achieve the study's goal. The analysis and hypothesis testing were conducted on a sample of 42 manufacturing firms listed on the ASE. Inventory turnover, receivables turnover, current assets turnover, working capital turnover, and inventory-to-sales ratio are used to measure working capital management efficiency, whereas return on assets is used to measure financial performance. Inventory turnover, receivables turnover, current asset turnover, and working capital turnover all have an impact on manufacturing organizations' financial performance, according to the study.

Kabir et al. (2021) investigated the impact of working capital management on firm performance. The study employs a qualitative research design, and data for the study were gathered through the secondary method from the body of existing empirical studies. The regression results of the empirical studies reviewed were used to analyze the study's data. The study concludes that the longer the cash conversion cycle and debtors' collection period, the worse the business performance, implying that the cash conversion cycle and debtors' collection period are important in determining business performance because they can lead to an increase or decrease in business profitability. The study, on the other hand, concludes that the longer the payment period for creditors, the better the business performance because it helps to improve profitability.

Fekadu (2021) used a total of 164 Ethiopian exporters to explore the fundamental impact of working capital management on the success of export firms. The results show that working capital management, as measured by account receivables period, cash conversion cycle, and accounts payable period, has a statistically significant and positive correlation with the performance of Ethiopian exporting firms, as measured by both return on assets and return on investment.

However, whereas inventory conversion period has a statistically significant and favorable influence on return on investment, it has no effect on the performance of Ethiopian export enterprises evaluated by return on assets.

With a focus on Larfage Africa-Cement Plc, Ogunlade et al. (2021) investigate the impact of working capital management on financial performance. The secondary data was taken from Larfage Africa Plc- Cement's audited financial statements for the years 2011 to 2020. The mean standard deviation and ordinary least square method of estimate were employed in the analysis.

The study concludes that working capital management parameters contribute to financial performance in tandem. It was also discovered that the inventory conversion period (ICP) and cash conversion cycle (CCC) have a positive but insignificant impact on financial performance, while the debtor conversion period (DCP) has a negative but insignificant relationship with financial performance, and the creditors' conversion period (CCP)

has no relationship with financial performance.

Chakraborty (2018) investigated the impact of working capital turnover on Indian Pharma companies' profitability (return on capital employed, return on equity, return on total assets earning per share, and price/earnings ratio) from 2011 to 2017, using current assets and current liabilities as independent variables. Thus, using ANOVA, the results revealed that there was no relationship between working capital turnover and profitability measures. From 2011 to 2015, Hassan (2017) investigated the impact of working capital management (cash conversion cycle, stock turnover ratio, receivable turnover ratio, payables turnover ratio) on financial performance (return on assets) of 19 water processing firms in Portland state. Using multiple linear regression analysis, the results showed that the cash conversion cycle, stock turnover ratio, and receivable turnover ratio all had a significant effect on profitability, with only the cash conversion cycle having a positive but non-significant effect, while payables turnover had a negative but non-significant effect. Oyedele et al. (2017) investigated the impact of working capital management on Nigeria Breweries PLC's financial performance. The working capital policy variables investigated were Cash conversion circle (CCC), Inventory conversion period (ICP), and Debtor conversion period (DCP), with ROA serving as the dependent variable. Multiple regression analysis was used in the study, and the results revealed that CCC, ICP, and DCP were all negatively related to ROA. Only CCC was statistically significant.

Muia et al. (2017) investigated the impact of working capital management on the financial performance of Nairobi Stock Exchange-listed manufacturing companies. As independent variables, the average collection period (ACP), net sales, and leverage were used. Multiple regression analysis was used, and the results revealed that ACP and leverage were both negative, though not statistically significant. In the light of the above, the hypothesis is specified thus;

H₀₁: Working capital policy has no significant impact on firm profitability

Theoretical framework

The research is based on Ans Mcinnes' 1937 prescriptive theory of working capital (Diallo and Obotto, 2003). The theory assumed that if WC is managed optimally, businesses will invest in it and monitor factors that influence it. The purpose of analyzing and measuring the impact of cash management, accounts receivables (debtors), inventory, accounts payables (creditors), and the cash conversion cycle is to ensure that assets are used effectively and efficiently for overall efficiency, profitability, and shareholder wealth maximization. The theory's main focus is on optimal WC management for

profitability. The theory's emphasis emphasizes its relevance to the study because effective WCM is one of the major endogenous policies required in the Nigerian manufacturing environment for profitable operation, whereas other factors outside managerial policy (exogenous factor) have been negatively influencing the firms' profitability objective (Diyola and Oke, 2020; Lawal and Aduku, 2020).

METHODOLOGY

In this study, the ex-post facto research design was used. The positivism research philosophy was used in the study as well, as quantitative approaches were used to provide answers to the study objectives. A sample of 31 manufacturing/industrial firms listed on the Nigerian Exchange Group was used in the study (NEX). The information was obtained from corporate annual reports of companies listed on the Nigeria Stock Exchange for the fiscal years 2010-2019. This study employed descriptive statistical methods and will include descriptive techniques such as the mean, standard deviation, range, frequency distribution. More importantly, Arellano and Bond (1991) dynamic panel estimator is employed alongside random effects (RE) and fixed effects (FE) estimators.

Model specification

The model for the study examines the impact of working capital policy on firm profitability and both the functional and econometric models are presented (Table 1) below:

$$\begin{aligned} \text{PM} &= f(\text{Working capital policy}) \\ \text{(i)} \quad \text{PM} &= \beta_0 + \beta_1 \text{CCC}_{it} + \beta_2 \text{CPP}_{it} + \beta_3 \text{DCP}_{it} + \beta_4 \text{FSIZE}_{it} + \mu \\ \text{(ii)} \end{aligned}$$

Where:

CCC= Cash conversion cycle,
CPP= Creditors payment period
DCP= Debtors collection period
FSIZE= Firm size

i and t = each firm and each year respectively.

RESULTS AND DISCUSSION

The descriptive statistics of the data is presented in (Table 2). As observed, CCC has a mean of 90.58 days which is about three months. The maximum and minimum CCC is 910 days and approximately 9 days respectively. The standard deviation is 718.2315 is large and confirms substantial variations in CCC across the firms in the sample. The Cash Conversion Cycle (CCC) measures the interval between the time cash

Table 1: Variable measurement and source

Variable	Definition	Measurement	Source
PATM	Profit Margin	Gross profit/net sales x 100	Oyedele et al. (2017)
CPP	Creditors payment period	Average accounts receivable/ total credit sales x 365 days	Almomani et al. (2021)
DCP	Debtors collection period	Average accounts payable/ cost of goods sold x 365 days	Oyedele et al. (2017)
CCC	Cash conversion cycle	CPP - DCP + Inventory turnover period	Muia et al. (2017)
FSIZE	Firm size	Log of total assets	Muia et al. (2017)

Source: Researcher's compilation (2021).

Table 2. Descriptive statistics

Variable	CCC	CPP	DCP	PATM	FSIZE
Mean	90.5868	232.0519	75.94527	10.14239	16.1337
Median	27.79842	129.5514	52.69057	5.040354	15.97632
Maximum	910.8297	1626.78	2247.536	696.536	21.23362
Minimum	8.9	7.154281	0.744053	-2224.2	11.72637
Std. Dev.	718.2315	843.57	128.6903	352.8799	1.844819
Skewness	-14.6783	16.19919	11.71772	16.53528	0.224781
Kurtosis	259.1868	299.2908	187.5722	342.4392	2.608435
Jarque-Bera	1227359	1639799	638956	2146938	6.560627
p-value	0.0000	0.000	0.000	0.000	0.000

Source: Researchers compilation (2021).

Table 3. Correlation Statistics.

	CCC	CPP	DCP	PM	FSIZE
CCC	1				
CPP	-0.47626	1			
DCP	-0.48047	0.285565	1		
PM	-0.50691	0.342843	0.40658	1	
FSIZE	0.016271	-0.04382	-0.08317	0.00621	1

Source: Researchers compilation (2018).

expenditures are made to purchase inventory for use in the production processes and the time that funds are received from the sale of finished product. A shorter CCC results in higher present value of net cash flows generated by the assets and therefore, a higher firm value. Furthermore, a short CCC implies that lesser day's cash is tied up in working capital not offset by free financing in the form of deferred payments, results in more liquidity for the firm. The mean for CPP is 232 days and this shows on the average the length of time firms in the sample take to pay their accounts payables. Hence, the value shows that on the average manufacturing firms pay their creditors or account payables within one accounting year. The maximum observed in the sample is 1626 days which is about 4 years and 6 months while the minimum is about 7 days. The standard deviation of 843.57 confirms substantial variations in CPP across the firms in the sample. The average DCP is about 76 days and that is a little over two months with a maximum value of 2247 and minimum value of 0.7 respectively. The standard deviation of 128.6903 confirms substantial variations in DCP across the firms in the sample.

The DCP is the period allowable for customers to settle their debts for the purchases of goods or services. The management of accounts receivable is largely influenced by credit policy and collection procedures (Brigham and Ehrhardt, 2008). The mean PM is 10.14% with maximum and minimum values of 696.536 and -224.2%. The standard deviation of 352.8799 confirms substantial variations in PM across the firms in the sample. Firm size used as control variable as mean value of 16.133 with maximum and minimum values of 21.23362 and 11.72637 respectively. The Jacque-bera statistics for all the variables reveals that the series are normally distributed given that the J.B values are all less than 0.05. This implies the absence of significant outliers in the data. The Pearson product moment correlation is examined to provide insight into the direction and degree of association between firm profitability and the cash management variable in the study. As observed, a negative correlation is observed between CCC and PM ($r=-0.707$) which suggest that delays in CCC can be associated with a decline in firm profitability (Table 3). A positive correlation is observed between CPP and PM

Table 4. Variance Inflation Factor Test

Variable	VIF
C	NA
CCC	8.44755
CPP	6.85979
DCP	5.152803
FSIZE	1.338685

Source: Researchers compilation (2018)

($r=0.7428$) and this suggest that firms fulfilling their accounts payable more timely can be associated with positive effects on profitability. A positive correlation is observed between DCP and PM ($r=0.7065$) and this suggest that firms allowing longer periods for debtors to fulfil their obligations are associated with higher profitability and finally a positive correlation is observed between firm size and PM ($r=0.00621$) and hence there is a positive association between larger firms and profitability. The variance inflation test is examined below to investigate for the presence of multicollinearity between the variables and the results is presented in (Table 4).

The variance inflation factor (VIF) explains how much of the variance of a coefficient estimate of a regressor has been inflated, as a result of collinearity with the other regressors. Essentially, VIFs above 10 are seen as a cause of concern as observed, none of the variables have VIF's values more than 10 and hence none gave serious indication of Multicollinearity.

Table 5 shows the regression results of the Random effects (RE) and fixed effects (FE) models and Arellano and Bond dynamic panel estimation. To determine which model is better between the fixed and random effects estimations, the Hausman test is conducted and as observed the Hausman test statistic (Prob = 0.021) indicates that the RE method may give bias and inconsistent estimators when compared to FE model. Therefore, given that the FE is preferred to the RE. As shown in the results, the R^2 for the FE model is 0.4862 which implies that the model explains about 48.62% of the systematic variations in the dependent variable with an adjusted value of 42.52%. The F-stat is 7.97472 (p -value = 0.00) is significant at 5% and suggest that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model. The analysis of coefficients reveals CCC is positive (0.1151) and significant ($p=0.0006$) at 5% which implies that an increase in cash conversion cycle has a positive and significant effect on firm profitability. CPP has a positive beta (0.2652) and significant ($p=0.0149$) at 5% which implies that longer periods for payables accounts settlement has a positive and significant impact on firm profitability. DCP has a negative beta (-0.0459) suggesting that lower allowable periods for debtors to fulfill their financial obligations to the firm can improve firm

profitability, though the result was not significant ($p=0.1944$) at 5%.

Going forward, a most recent study by Dina and Silvije (2018) have shown that in models testing the impact of working capital on the company's profitability, there may be a problem of endogeneity and/or bias caused by omitted variables. Though the FE models mainly control for unobserved heterogeneity, they do not account for the endogeneity problem (Cameron and Trivedi, 2005). To deal with this issue the Arellano and Bond (1991) dynamic panel estimator is employed which seems appropriate considering the dynamic nature of the company profitability and controls for potential endogeneity problem. The Arellano and Bond estimation results show substantial difference from the FE estimations which stronger beta's and confirming that the Arellano and Bond estimations results after correcting for endogeneity are more impressive. The analysis of the coefficients reveals CCC has a positive (0.6578) significant effect ($p=0.000$) on firm profitability and the estimates are higher than that observed for the FE estimation. The statistical significance of the effect of CCC on firm profitability is thus confirmed in the study. However, the direction of the CCC beta here is positive which suggest that longer cash conversion cycle will improve firm profitability. Though this view does not conveniently fit into our theoretical expectation as the traditional link between the cash conversion cycle and the firm's profitability is that shortening the cash conversion cycle increases firm's profitability. On the other hand, shortening the cash conversion cycle could harm the firm's operations and reduce profitability. However, the existence of a positive relationship is very likely in times of cheap credit where cash cycles can be slow to shorten, as it becomes more affordable for companies to borrow money toward their inventory investments. In fact, cheap debt has led large retailers and other similar companies to increase their debt loads by more than 60% and, according to the Wall Street Journal (2008) by taking on more debt, companies can invest in operations, and fund dividends and buybacks, without having to generate cash any faster," leading to increasing or stagnant CCCs across the board.

CPP has a positive impact (0.6944) on firm profitability which is significant ($p=0.00$) at 5%. Hence we reject the null hypothesis that Creditors payment period has no significant effect on financial performance. CPP is the average length of time between the purchase of material and labor and the payment of cash for them. It is expected that this variable has positive relationship with the Profitability which also makes economic sense. As the firm takes more time in making payment to payables, it will have positive impact on firm's profitability because firm takes time to utilize funds for a longer period. The finding of the study is in line with

DCP has the expected negative sign (-1.15104) and significant ($p=0.0000$) unlike what was observed for the

Table 5. Regression results.

	Aprori sign	FE-Estimator	RE-estimator	Arrelano and bond estimator
c		-69.6145* (32.275) {0.0316}	-181.5898** (100.6902) {0.0720}	
CCC	+	0.1151* (0.0332) {0.0006}	0.0223 (0.1255) {0.8589}	0.6578* (0.0112) {0.0000}
CPP	+	0.2652* (0.1085) {0.0149}	0.136460* (0.06658) {0.0410}	0.69446* (0.0121) {0.0000}
DCP	—	-0.0459 (0.0353) {0.1944}	0.721695 (0.52417) {0.1693}	-1.15104* (0.0180) {0.0000}
FSIZE	+	1.937626* (0.7698) {0.0122}	7.524057** (4.41685) {0.0892}	85.4943* (1.14289) {0.000}
PATM(-1)				0.00417* (6.42E-05) {0.0000}
R ²		0.4862	0.641289	
Adj R ²		0.4252	0.636364	
S.E. of regression		140.15	208.3217	
F-statistic		7.97472	130.2086	
Prob.(F-statistic)		0.000	0.000000	
d.w.		1.71	0.568	
hausman		0.021		
J-statistic				36.26935
Prob.(J-statistic)				0.409251
AR(1)				0.6693
AR(2)				0.264

FE estimation and result confirms statistically that longer allowable time for debtor's receivable negatively affects profitability. Longer debtor's collection periods affect the liquidity conditions of the firms which implies that production activities can be halted and the firm stands a risk of insolvency if debtors do not meet their obligations in a timely manner. A shorter debt collection period ensures that the firms stay very liquid and that cash flows are available to be channeled to other productive investments. Hence we reject the null hypothesis that debtor's collection period has no significant effect on financial performance. Therefore, on the overall, the null

hypothesis (H01) that working capital policy has no significant impact on firm profitability is rejected as both CCC, CPP and DCP are all significant at 5%. The study finding is in tandem with Almomani et al. (2021), Kabir et al., (2021), Fekadu (2021), Ogunlade et al. (2021) but in contrast with Chakraborty, (2018) results which showed that there was no relation between working capital turnover and the profitability measures. The control variable of firm size is positive with a very high basis point (85.4943) and also significant at 5% ($p=0.000$). The lag of PM is positive (0.00417) and significant at 5%. One point to be emphasized is that (Table 5) for the GMM

estimation results are the J-stat test of over identifying restrictions and the Arellano and Bond test for autocorrelation error. The J-stat tests yield all p -values above 0.10, which means that a null hypothesis could not be rejected. Hence, over identification restrictions are valid. The AR (1) tests indicate that the residuals in first differences are correlated as expectation, while the AR (2) tests give p -values above 0.10, which means that a null hypothesis of no second-order serial correlation could not be rejected. Therefore, all results of the GMM model are valid.

Conclusion

The aim of the study is to examine the impact of working capital policy on firm profitability using listed manufacturing/industrial firms in Nigeria. Specifically, the study examined the following indicators of working capital policy; Creditors payment period, Debtors collection period and Cash conversion cycle. The Arrelano and Bond dynamic panel data estimation was employed in the analysis to address the potential effects of endogeneity in the relationship. The findings reveal that Cash conversion cycle has a positive and significant impact on financial performance, Creditors payment Period (CPP) has a positive impact on firm financial performance which is significant at 5%, Debtors Collection Period has the expected negative sign and significant and result confirms statistically that longer allowable time for debtor's receivable negatively affects profitability. Furthermore, cash flow margin (CFM) has a positive impact on financial performance which is also significant at 5% and finally, Cash holding has a negative impact on financial performance which is significant at 5%. The study recommends that nevertheless, firms should not depend so much on debt especially in the light of macro-economic instability and rates volatility but rather look at how to develop strategies to lower their cash conversion cycles. Secondly, the study recommends that firms seek long term financing arrangements with longer payback periods which could enable them properly utilize these funds with convenient investment timelines. Thirdly, the study recommends the need for firm to maintain cash flow system and liquidity by ensuring lower debtors collection period.

Disclosure of conflict of interest

None

REFERENCES

- Afza, T., and Nazir, M. (2008). Working capital approaches and firm's returns in Pakistan. *Pakistan Journal of Commerce and Social Sciences*. 5(1), 11-30.
- Almomani, T., Almomani, M., Obeidat, I. (2021). The relationship between working capital management and financial performance:

- Evidence from Jordan. *Journal of Asian Finance, Economics and Business* 8(6), 713–720.
- Brigham, E. F. and Ehrhardt M.C. (2004). *Financial Management: Theory and Practice*, 11th Edition, South-West College Publishing, New York.
- Cameron, A.C. and Trivedi, P. (2005). *Micro econometrics: Methods and Applications*, Cambridge U. Press.
- Chakraborty, A. (2018). Working capital management and Its Impact On P/E Ratio: A Study On Indian Automobile Companies. *International Journal of Management and Social Science Research Review*, 7(4):27-46.
- Diallo, W.R. and Obotto, A.G. (2003). *Financial Management* 1st Ed. Lagos CTAC publishers.
- Dina, K., and Silvije. O. (2018). The impact of working capital management on profitability of Croatian software companies. *Zagreb International Review of Economics and Business*. 21(2):47-66.
- Diyola, O.O. and Oke, M.C. (2020). Criteria for evaluating the performance of manufacturing
- Fekadu, A. (2021). Working capital management and its impact on firms' performance: An empirical analysis on Ethiopian Exporters. *Education Research International*, 5(1):21-31.
- Hassan (2017). Working capital management among listed companies of Pakistan" *International Journal of Research* 5(2), 80-91.
- Lawal, K.S. & Aduku, N.R. (2020). Reposition manufacturing enterprises in Nigeria for growth and profitability. *Journal of Contemporary Studies* 1(1):112-124.
- Kabir, Y., Muhammad, U., and Sunday, E. (2021). Working capital management and business performance. *Nigerian Journal of Marketing (NJM)* 7(1):14-25.
- Muia, V.M., Banafa, A.A., Mwanzia, M.S. (2017). The effect of working capital management on the financial performance of firms listed at the Nairobi Securities Exchange. *International Journal of Management and Commerce Innovations*, 4(2):881-88.
- Ogunlade, O., Oseni M., & Adeyemi M. (2021). A panel study of working capital management and financial performance of Nigeria's manufacturing sector. *Indiana Journal of Economics and Business Management*, 1(1):25-31.
- Oyedele, O., Adeniran, O J., & Oluwatosin, E.O (2017). Working Capital Management and Financial Performance: Evidence from Nigerian Breweries PLC. *International Journal of Innovative Finance and Economics Research*, 5(3):29-36.
- Raheman, A., and Nasr, M. (2007). Working capital management and profitability-case of Pakistani Firms. *International Review of Business Research Papers*. 3(2):279-300.
- Ramazani, M., Salehi, M., and Laridashtbayaz, M. (2018). Relationship between cash flow management and financial performance of companies listed on the Tehran Stock Exchange. *Proceedings of the Faculty of Economics in East Sarajevo*, 1(17), 27–37. <https://doi.org/10.7251/ZREFIS1817027>